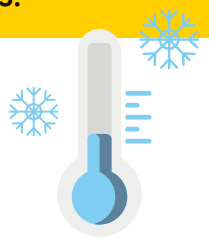
# RISK & SAFETY WINTER CHECKLIST

Preparing your facility for winter weather and potential disruptions.

*The best approach to minimizing risk resulting from these very cold polar air plunges is to prepare in advance of winter for potential extended loss of power or impacts to critical infrastructure upon which your business may depend...*
***Below are some tips to better prepare.***



## 1 Plan to Win.

Before the cold season gets into full swing, **develop a basic weather impact and business continuity plan to place your business in the best position to minimize operations impacts and weather damage.** The plan should address responsibilities for preparations, triggers for activating various aspects of the plan, a stock-up of equipment and materials to be used by staff to prepare, vendor or subcontractor arrangements for preparation, heat, temporary power and recovery, and restoration steps to be implemented once the event has passed.

## 2 Getting the Business in Order.

When extreme weather can impact supply chains, it is important to put your business continuity plan to work. Stocking up on raw materials from suppliers is smart. Check spare parts and equipment inventories and verify your business has the items needed. Working with key personnel such as facilities, operations, and special equipment operators to pre-arrange for nearby accommodations during a severe cold snap could help to limit risk for damage or functional disruptions, as well as reinforce on-site security provisions

## 3 Pay Attention to Weather Forecasts.

Make a point to regularly review forecasts to identify potential impending weather events which could create disruptions or potentially create loss of power. Weather forecasting today has improved greatly over the past decade and PV events can usually be identified in advance enabling time for preparation. With an already created restoration and response plan, businesses can activate their plan and prepare not only for temporary impacts, but also for the restoration and recovery period immediately following.

## 4 Plan for Necessary Heat.

It is important to remember that heating appliances usually require some amount of electricity to operate. Your business should plan ahead to assure continued heating, at least at a minimum temperature required to operate. Under no conditions should internal heat ever fall below 40° F, but ideally never less than 50° F. Thermostats and sensors in the facility only record temperatures at that location and does not necessarily indicate that all areas of the facility are exposed to that temperature reading. It may prove helpful to raise the heat limits in some areas of the building in anticipation. In all cases, during a severe winter weather outbreak with very cold temperatures, the plan should call for periodic temperature readings using a reliable device to assure minimum required temperatures are maintained at all times.

## 5 Protect All Piping.

Piping is used in most all facilities to support heating systems, cooling systems, plumbing systems, fire protection systems, processing operations, etc. It is crucial to protect piping from freezing. Most piping will function well if the building(s) can maintain temperatures above 40° F. Freeze susceptible piping can be proactively protected to limit freezing damage. Options such as local area heating, insulation, or heat trace can prove beneficial. In addition to internal piping, it is important to also consider piping and systems on the exterior of the building. Any cooling towers must be operated and flowing at high volumes to avoid freezing in cold temperatures. Exterior air handlers and air conditioners may also be susceptible and should be properly protected. Extra insulation or similar protection may suffice, but don't neglect them.

## 6 Mitigate Heat Loss.

Buildings are not airtight. There are always opportunities and small openings in which heat can escape and cold air infiltrate the structure. Being aware of those locations and/or treating those particular points to limit that exchange can help in an extended cold snap. Provide additional insulation, improve seals, or provide sufficient additional heat to contend with the cold infiltration as necessary. Where these exist in areas with cold-susceptible features (liquid filled pipes, etc.), extra care should always be taken to limit exposure.

## 7 Pre-Arrange Restoration Services.

After a widespread disaster, finding contractors to make repairs and restore facilities are hard to come by. It always makes sense to establish an agreement and HVAC contractor will be very helpful to have on retainer. Be sure to engage qualified and sufficiently insured contractors whom your business has vetted in advance.

## 8 Arrange for Redundant Power.

Arrange for a means to provide necessary power to the facility according with the operational needs and the business continuity plan. This can take the form of permanent redundant power on site via backup generators, fuel cells, battery energy storage systems. Where redundant power is not provided, the business can contract and should pre-arrange (in advance) with local vendors for provision of rental generators for an extended period as may be necessary. This may require advance set-up and installation of special electrical connections such as an automatic transfer switch to enable immediate connection should an outage event occur. Please note that most heating appliances require electricity for system controls, fans, etc. If backup power is not available, heat for the facility may be compromised.

## 9 Enhance Roof Maintenance Program.

Before snow or other cold weather precipitation occurs, make sure facility roofing systems are in good shape, debris is removed, and roof drains are adequately cleared. Drifting snow can bear down on roofs. The business continuity plan should list tasks and a responsibility for periodic monitoring of roof conditions to make sure that drifting snow does not become so extreme that it can lead to overloading your structure and a potential collapse. Ice dams can occur that may inhibit draining of roof sections when thawing occurs. The periodic roof inspection should include checking for this condition so that it does not lead to excessive roof loading or other damage. There are electrical heating options such as de-icing cable or mats that can be applied on roofs at strategic places to help with both drifting snow and ice dams around drain points.

## 10 Protect Against Infestation.

As temperatures drop quickly, pests will want to find a way to keep warm. An ongoing pest management service can be helpful. While investigating for heat leaks above, be mindful of opportunities where pests can make access inside. Sufficiently treat those to prevent entry. In all cases with pests, be careful and engage a professional for removal if one accesses the interior.